

A date with Shanghai Disney

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Abstract

This paper narrates the story of how Dalian Shantai New Industry Co., Ltd. got involved in the Shanghai Disneyland project. The rigorous standards of the projects and the hard work Dalian Shantai did are stated. This shows the China domestic GRC companies are capable to meet any challenges from GRC works all over the world. Meanwhile, to Dalian Shantai, the ability of management and workmanship is consequently improved through the cooperation with top-end clients.

INTRODUCTION TO DISNEYLAND

Disneyland is owned and operated by the Walt Disney Company which was founded by Walt Disney. The first Disneyland was built in Anaheim, California and opened in 1955. In 1971, Disneyland in Florida was completed after 10 years' construction. In 1983, Disneyland in Tokyo was completed. In 1992, Disneyland in Paris which cost 44 billion US dollars was opened. On 12 September 2005, Hong Kong Disneyland became the first Disney theme park in China. On 4 November 2009, the Shanghai government announced that Shanghai Disneyland project had been approved. It was the second Disneyland in China, the third one in Asia and the sixth one in the world. On 8 April 2011, the construction of Shanghai Disneyland project started, it was expected to open to the public in 2016. Therefore there so far are six Disneyland in California, Florida, Paris, Tokyo, Japan, Hong Kong and Shanghai respectively.

Among the six parks, the one located in Orlando, Florida has the largest area, 12,228 hectares. The smallest one is Hong Kong Disneyland, which covers 126 hectares, namely only one percent of Orlando Disneyland. Orlando Disneyland consists of four theme parks, in terms of "Magic Kingdom", "Epcot", "Disney's Hollywood Studios" and "Animal Kingdom", each one is larger than Hong Kong Disneyland. There are also two water parks. It takes at least 5 days if one wants to have fun in all of those places. The second largest one is Paris Disneyland which covers an area of 2023 hectares, it consist of "Disneyland Park" and "Walt Disney Studios Park". California Disneyland covers an area of 206 hectares, and has "Disneyland Park" and "Disney California Adventure Park". Tokyo Disney Resort covers an area of 201 hectares, and consists of two theme parks, "Disneyland" and "Disney Sea".

Shanghai Disneyland Park located in Pudong, Shanghai as part of the Shanghai Disney Resort. It is owned and operated through a joint venture between The Walt Disney Company and the Shanghai Shendi Group.

Unlike traditional "Disneyland" style theme parks found all over the world, the centre of the park will feature an 11-acre collection of gardens called the Gardens of Imagination instead of the "hub". Other themed areas will include the Mickey Avenue, Gardens of Imagination, Tomorrowland, Toy Story Land, Treasure Cove and Adventure Isle.

THE STORY OF HOW DALIAN SHANTAI PARTICIPATED IN THE SHANGHAI DISNEYLAND PROJECT

Disneyland Park is a theme park well-known for its highest construction cost and workmanship standard. It is a dream project for all theme park contractors in the world. The reason is very simple, that is those contractors who can pass Disney's demanding acceptance criteria are considered to be the world's first-class companies. Companies that can do a good job in Disney project will be well accepted in the theme park industry. Meanwhile, it also has positive impact on further improving product quality and management procedure in the company. Therefore, many Chinese contractors including Dalian Shantai, were eager to participate in Shanghai Disney project.

As a leading company in China GRC industry, Dalian Shantai produces GRC cladding panel, GRG and FRP elements, coloured cast stone, coloured concrete imprinting and spraying floor, themed plastering, stained concrete and others. Its products have been applied in large-scale theme parks both in domestic and oversea market. Although it was quite late when Dalian Shantai entered the bid of Disneyland project, it drew attention of Disney side quickly, and the latter decided to send an investigatory team to inspect Shantai's factory.

Factory inspection

Requirements for factory inspection from Disney Company mainly include the following aspects:

- Area and situation of production area, warehouse, office, yard etc. needs to meet the Disney's special requirements;
- Quantity and quality of production equipment needs to meet relevant standards;
- Master mould production area, mould production area, product production area and finished product storage area shall be allocated exclusively for Disneyland project within the factory;
- Designers, production personnel, QA, QC personnel, safety maintenance personnel and managing director need to be assigned in place for Disney project;
- The company's production process, QA, QC process, organisation structure also need to comply with relevant requirements;
- The company's annual turnover needs to meet relevant requirement.

Following the above requirements, Dalian Shantai called a special meeting to develop a programme for the inspection. After several rounds of study, discussion and modification, Dalian Shantai's management team finally worked out a sound programme within a short period of time. Disney's requirements were broken down into detailed works and assigned to individuals. All staff in Dalian Shantai worked hard to make a difference within three days, later on, the factory passed Disney Company's inspection all at once.

Design

A specially assigned design team was dispatched to Disney's office and work closely with the client from the very beginning, the design work has come through the following stages so far:

- 1) To gather drawings related to GRC elements among a mass of architecture, structure and service drawings.
- 2) To carry out initial design development, communicate with different professions involved in the project to ensure no conflict; to communicate with Disney designers and discuss any problems that occurred during the initial design development phase.
- 3) The initial design development is followed by the detail design, details like connections and joint with components from other professions were considered.
- 4) To discuss and decide the fixing details with Disney engineers and answer questions the latter raised; to discuss and decide the GRC finish with architects and modify the design according to architects' recommendation. After repeated discussion and modification, the final version of detail design was completed.
- 5) To transfer the detail design on-line and get the approval from other professions like architects, structural engineers, electrical engineers, water & drain engineers etc.
- 6) To modify the design according to the feedbacks from other professions until get the final approval.
- 7) To confirm the dimension on site. Based on the dimension and combined with the detail design to draft the production drawings. Follow the same procedure as stated in clause 5), and work out the final production drawings.
- 8) As per the requirement of Disney, to carry out the mechanical analysis for the designated elements and provide the calculation sheet, which shall be stamped and signed by one of the First grade State Registered Structural Engineers.
- 9) To Issue production drawings to the factory and start making the master mould.

Inspection of the first trial element

After passing factory inspection, Dalian Shantai was nominated to make the first trial element chosen from the GRC project in the queuing area of the Treasure Cove. According to the requirement of Disney Company and the main contractor, all trial elements need to pass their inspection before contract can be signed, whilst the first trial element need to pass the inspect before allowed to make all the trials samples.

On 15 August 2014, Disney Company and the main contractor did the inspection on the first trial element. However, due to the lacking of understanding of Disney Company's technical standards, this inspection failed. Problems included uneven surface, excessive thickness, absence of wood texture on both ends and deformation of embedded parts.

Disney Company's consideration and trust on Dalian Shantai was highly appreciated, professionals and engineers were sent to the factory to deliver training and instruction, helping Dalian Shantai understand the technical procedure and criteria of Disneyland project. Under the guidance of Disney personnel plus the efforts made by the technical personnel of Dalian Shantai, causes of problems occurred in the first trial element were revealed and after that a new piece were made with clear wood grain, realistic texture and natural crack [Figure 1], and it satisfied greatly Disney Company and the main contractor.

To assure Disney Company and the main contractor, another piece was made and inevitably satisfied them once more. Thus Dalian Shantai was awarded to produce all the trail elements.



Figure 1. The first trial element

Inspection of 36 pieces of trial elements

On 13 October 2014, Dalian Shantai received the inspection team. Using various testing instruments, the team spent nearly 6 hours to examine all the 36 pieces in 14 categories. Finally, all the pieces passed the inspection and were appraised by the team as “World First-class Products”. Some pieces are shown in [Figure 2, A-F]



A



B



C



D



E



F

Figure 2 A - E. Trial elements that passed the inspection

Signing the contract

All the trial elements passed the inspection, this indicated that Dalian Shantai's production technologies, production organization, personnel arrangement met Disney Company's technical standards and was capable to undertake Disney project. In 2014 November, Dalian Shantai signed a contract with the main contractor, VMC constructions, regarding the GRC project in the Queuing Area of the Treasure Cove in Disneyland.

Raw materials

According to Disney's technical requirements, all GRC main and auxiliary raw materials including bolts, nuts, embedded parts and sealant etc. must be sent to Disney Company and the main contractor for inspection before they were used for the production and installation. Of course, the main raw materials Dalian Shantai ordered were all top brands like NEG AR glassfibre, White Elephant white cement.

Personnel arrangement

According to Disney's requirement, all personnel involved in the project including welder, safety staff, librarian, production worker, security manager, installation worker must possess corresponding qualification certificates and pass Disney's special training programme and examination.

Production

Production had to follow the rigorous standard of Disney Company, which is shown as follows,

- Clear wood grain, no pinhole or comb;
- Thickness of products: 10mm;
- Vertical and horizontal diagonal error: < 5mm;
- Embedded parts precision error: < 5mm;
- Colour: identical to the sample board, no variation.
- Stud frame: 316L stainless steel (well-known for its difficult processibility).
- Sandstone texture: the texture was initially carved on the master mould, then silicone mould was made from the master mould, hence the final product is able to bear the vivid natural sandstone texture.

Installation

Installing personnel need to attend the following training; acceptance, climbing, fire and others special trade trainings before carrying out installation. During installation, the owner, operator and contractor monitor the whole process. Sample installation pictures are shown in [Figure 3]. It is worth mentioning that an epoxy resin, which can be carved, was designated to be used in the installation by Disney Company. The advantage is that this resin acts as a sealant in the joint and at the same time, it can be carved to realise the same texture as the adjacent GRC elements and consequently to achieve a seamless effect.



Figure 3. Installation pictures

OUR EXPERIENCE WITH DISNEY COMPANY

Dalian Shantai was highly praised by experts in Disney Company, more and more companies knew that Dalian Shantai passed the inspection and successfully signed a contract with one of the main contractors. Many of other main contractors are contacting Dalian Shantai for the subcontracting of their GRC, GRG, theme plastering, concrete flooring etc.

It was a great experience for Dalian Shantai to work on such a world-class theme park. The management team realised that an international first-class enterprise should have comprehensive management procedures; the technical staff learned how to develop process flow and technical standards, as well as how to choose suitable raw materials; The QC personnel noticed that world-class products involved extremely strict requirements, and learned how to carry out inspection on products according to quality standards. The production staff realised that GRC products can be made as fabulous as art work, and learned how to manufacturing elements according to process flow and technical standards. All of the staff have seen the weakpoints in the company and now know how to conquer and correct them. "Attitude leads to success", advanced management and production experience like this has been learned, Dalian Shantai staff become more and more professional.

For the company, successful signing a cooperation contract with Disneyland project has great significance. The staff showed common goals, strong belief, great implementation force, confidence and self-esteem when facing challenges. All of these were the guarantee for the continuous growing of the company.

Many Chinese enterprises failed to meet the rigorous requirements of Disney Company, but Dalian Shantai made it, which clearly showed the company's ability. Dalian Shantai is ready to meet the challenge from any prestigious projects. The company has set higher goals, i.e. only to produce top quality products and to aim to become the world's first-class GRC contractor. To realize these objectives, Dalian Shantai needs to learn more from advanced and useful experiences so as to constantly improve itself, make innovation and become a leading company in the GRC and decorative concrete industry.